

What is claimed is:

1. A navigation aide device capable of conveying traveling instructions to a user in possession of the device to allow the user to navigate from a predetermined source position on a predetermined road map, containing road information, to a predetermined destination position on the map, along an optimal road route, under control of travel instructions spoken by the device, the device including:

a. Position sensor for sensing position of the device and reporting that position;

b. Text to speech converter;

c. Sound conveying device operably connected to the text to speech converter for conveying speech to the user;

d. Memory for storing a predetermined road map containing road information; and

e. Controller operably connected to the position sensor, text to speech converter and map memory for

i. calculating an optimal road route between the source position and the destination position;

ii. generating a series of text road travel instructions that describe the optimal route in terms of associated road information;

iii. receiving the report of position by the position sensor during travel;

iv. calculating the speed of the device and its direction of travel from the positions reported by the position sensor;

v. determining the road map position corresponding to the reported position based on the position reported, the calculated speed, the calculated direction of travel and the road information;

vi. conveying the series of text road instructions to the text to speech converter;

vii. based on the road map position determined, controlling the text to speech converter to convey to the sound conveying device each of the series of text road instructions at a time before the travel has reached the map position corresponding to the particular text road

instruction such that the user hears relevant road travel instructions in substantially a timely manner;

- viii. comparing the determined road map position to the optimal road route to determine if the actual travel route is deviating from the optimal route, calculating an optimal correction road route between the determined road map position and a position on the optimal road route, generating a series of text road travel instructions that describe the optimal correction road route, conveying the series of text road travel instructions that describe the optimal correction road route to the text to speech converter, and based on the road map position determined, controlling the text to speech converter to convey to the sound conveying device each of the series of correction road route text road instructions at a time before the travel has reached the map position corresponding to the particular correction road route text road instruction.

2. The device of claim 1, wherein the predetermined source position is determined by the controller, prior to travel, by receiving the report of position by the position sensor before travel and determining, as the source position, the road map position corresponding to the reported position based on the position reported and the road information.

3. The device of claim 1, wherein the device is capable of being carried within a vehicle; and the sound conveying device includes an interface suitable for being connected to the input of a sound system of a vehicle; whereby the controller controls the sound conveying device such that road travel instructions being conveyed to the user are conveyed to the user via the sound system interface.

4. The device of claim 1, wherein the controller calculates an optimal road route between the source position and the destination position by

calculating an optimal road route between the source position and one or more first
arbitrary positions;
calculating an optimal road route between the destination position and one or more
5 second arbitrary positions;
determining one or more matches between first arbitrary positions and second arbitrary
positions; and
determining the optimal road route from among the matches between first and second
arbitrary positions.

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5. The device of claim 1, wherein
the device is being used in association with a predetermined application; and
the predetermined road map contains road information that is a subset of all the
road information available, with the subset being chosen based on its relevance to
15 the predetermined application.

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